Research Highlights

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Evidence of Plasma Exchange for Acute Renal Failure Is Lacking

The purpose of the study was to examine the results of multiple plasma exchanges in patients with new diagnoses of myeloma and acute renal failure. An open, controlled, randomized trial looked at 104 patients aged 18–81 at 14 Canadian medical centers from September 1998–October 2003.

Subjects were assigned randomly within 10 days of enrolling in the study to conventional therapy plus five to seven plasma exchanges (50 ml per kg of body weight with acid citrate dextrose as anticoagulant) or to conventional therapy alone. Chemotherapy was melphalan and prednisone taken daily for four days every 28 days for as many as 12 cycles, or slow infusion of vincristine, adriamycin, and dexamethasone (VAD) given on days 1–4, 9–12, and 17–20 for 28-day cycles for as many as six cycles. For subjects receiving VAD and randomized to plasma exchange, the VAD treatment was stopped one to five hours before plasma exchange and not given during the exchange. After plasma exchange, subjects received a bolus of adriamycin and dexamethasone to replace the amount that would have been infused.

Measurements included the following at one and six months: (a) serum creatinine, (b) serum calcium, (c) serum albumin, (d) 24-hour urine for protein, and (e) Durie-Salmon staging to classify the severity of multiple myeloma and glomerular filtration rate (GFR) (determined by using the modified diet in renal diseases equation). The primary outcome was a composite measure of death, dialysis, dependence, or GFR < 0.29 ml 8^2 m^2 (< 30 ml/mg per 1.73 m^2). The GFR < 0.29 ml S^{-2} M^{-2} is associated with increased risk of death, cardiovascular events, and hospitalization.

Similarities were found in the control and plasma exchange groups in dialysis dependence, chemotherapy, gender, age, hypercalcemia, serum albumin level, 24-hour urine protein level, serum creatinine level, and Durie-Salmon stagings. The plasma exchange group composite outcome appeared as 33 of 57 (58%), and the control group composite outcome appeared as 27 of 39 (69%), which showed a difference between groups of 11% (95% confidence interval, –8% to 29%, p = 0.36). One-third of the patients in each group died. Not enough evidence supports multiple plasma exchanges in acute renal failure at the onset of multiple myeloma to substantially reduce death, dialysis dependence, or GFR < 0.29 ml S^{-2} M^{-2} (< 30 ml/mm per 1.73 m^2) at six months.

Clark, W.F., Stewart, A.K., Rock, G.A., Sternbach, M., Sutton, D.M., Barrett, B.J., et al. (2005). Plasma exchange when myeloma presents as acute renal failure. *Annals of Internal Medicine, 143,* 777–784.

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Study Follows Teenage Girl Undergoing Treatment for Cancer

Dramatic advances have occurred in the treatment of childhood cancer since the 1960s, when most cancers were fatal. The current five-year survival rate for all childhood cancers is 75%. Because of such advances, the focus of research has shifted from treatment effectiveness to short- and long-term side effects of treatment and ways to minimize the distress they cause. The purpose of this research was to examine the daily symptom experience over three months of a teenage girl who underwent chemotherapy for stage IIIB Hodgkin lymphoma. A longitudinal case study design was used to examine the symptom experience of a single adolescent girl. Critical sampling was used to select a case with the highest potential to illustrate the phenomenon of symptom distress. Quantitative and qualitative data collection and analysis techniques were used to ascertain patterns in daily experiences with the symptoms of pain, nausea, vomiting, retching, stress, sleep alterations, and anxiety.

The subject was a 16-year-old female who lived with her parents and had two siblings. She was diagnosed with stage IIIB Hodgkin lymphoma. She was enrolled in the study for 84 days and, during that time, received chemotherapy (bleomycin, dacarbazine, doxorubicin, and vincristine) every two weeks for six cycles. Data collection took place in the outpatient clinic and at the subject's home. Three types of data collection were used to evaluate the subject's symptom experience. The first involved self-report tools (generally twice daily). The self-report measures included the following: symptom diary (rated symptoms at midmorning and bedtime daily on a scale from 1 (not at all) to 5 (the most possible), Pediatric Nausea Vomiting and Retching Guide (measures the frequency and severity of nausea, vomiting, and retching), Oucher Scale (self-report scale of pain intensity for children aged 3–18), and the Revised Children's Manifest Anxiety Scale (measures the level and nature of anxiety). The second involved biobehavioral measures (e.g., salivary cortisol levels, sleep actigraphy). The third included narrative interviews on a monthly basis. The interviews were minimally structured and based on events occurring while the subject was undergoing treatment. The focus was on different facets of the symptom experience, such as vulnerability to symptoms, overall assessment of response to symptoms, bothers and worries, and physical sensations. Four interviews lasting 1.5 hours each were completed.

The focus of the data analysis was the evaluation of trends and cyclical patterns in symptom data, and the analysis had four components: identification of trends, variation around the trends, deterministic cycles or patterns, and analysis of random residual effects. Variations and patterns were evaluated with visual analysis and graphed data (e.g., self-reported pain graphed over time). The narrative interviews were analyzed using directed qualitative content analysis. The data then were graphed over time to show the progression. Because the purpose of the study was to describe symptom patterns over time, the focus of the analysis was on the pattern, change, and variability rather than actual daily values.

An important finding was that the predictability evident in the subject's symptom patterns was in direct contrast to her perception that her symptoms had no predictability or pattern. The perceived lack of control over the symptoms caused the subject to have anxiety and depression and led her to question whether she could continue with treatment. The subject was "fighting the treatment"

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